

TBT data analysis result

❖ BPM

- ▶ Horizontal orbits
- ▶ Vertical orbits

❖ Lattice function

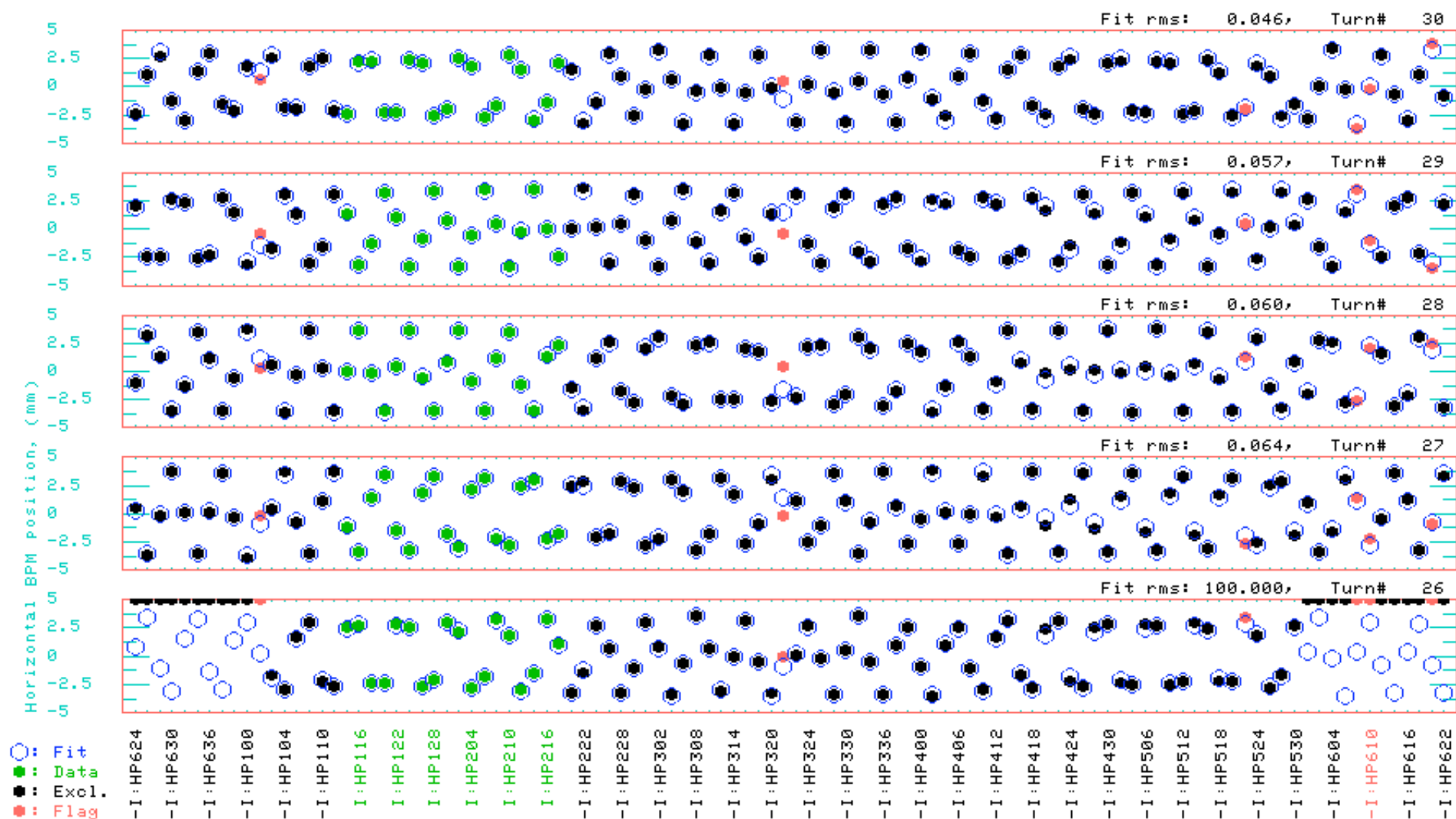
- ▶ As measured.
- ▶ Matched with quad errors.

❖ BPM calibration

- ▶ Normal BPMs
- ▶ WQB BPMs
- ▶ Vertical BPM with horizontal offsets.

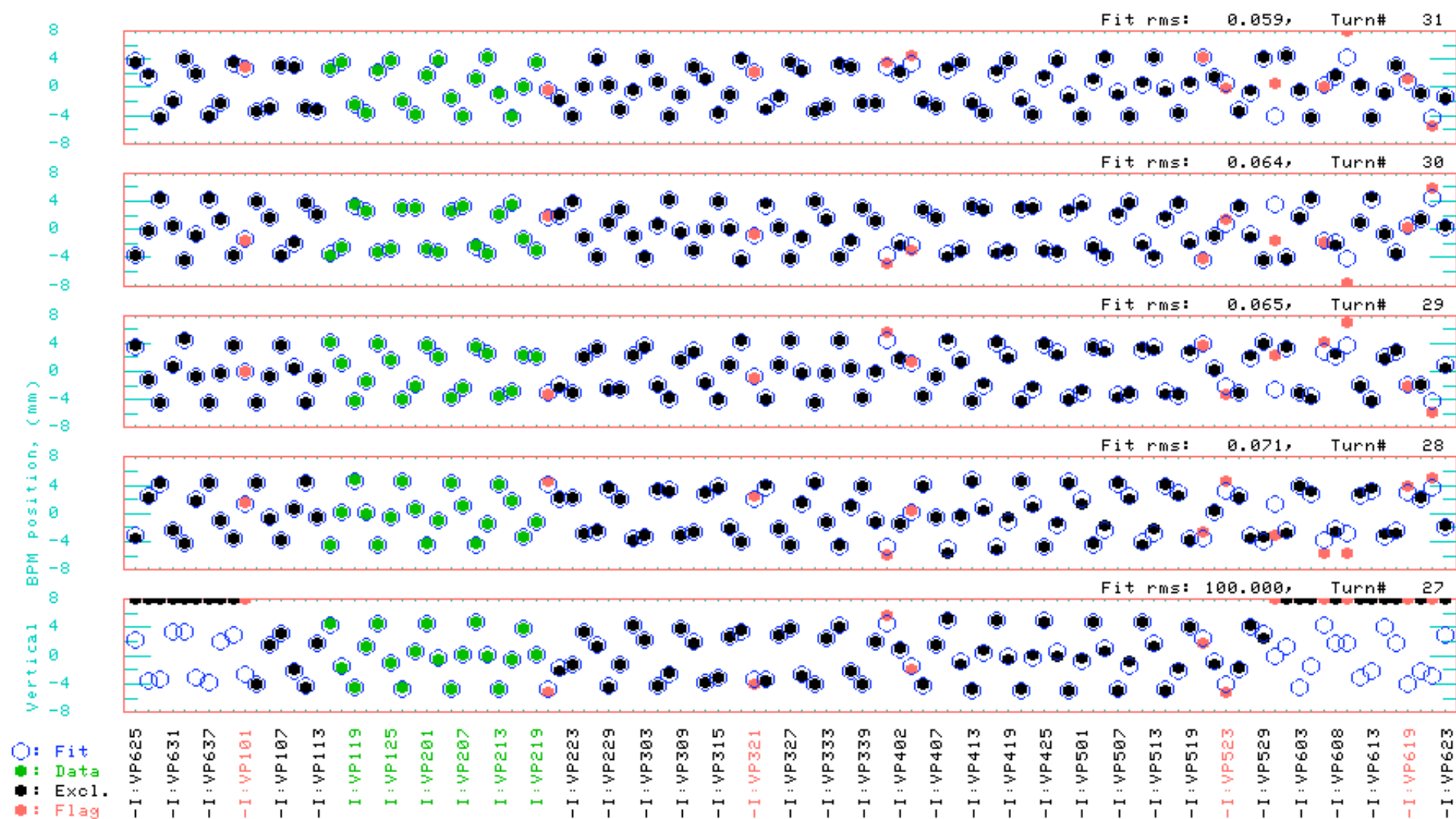
Horizontal TBT orbit, first 5 turns

(mi8g_061009_horz1.tbt) 09-OCT-06 14:11:39 horz, ht806@0.5 amp, ch=0



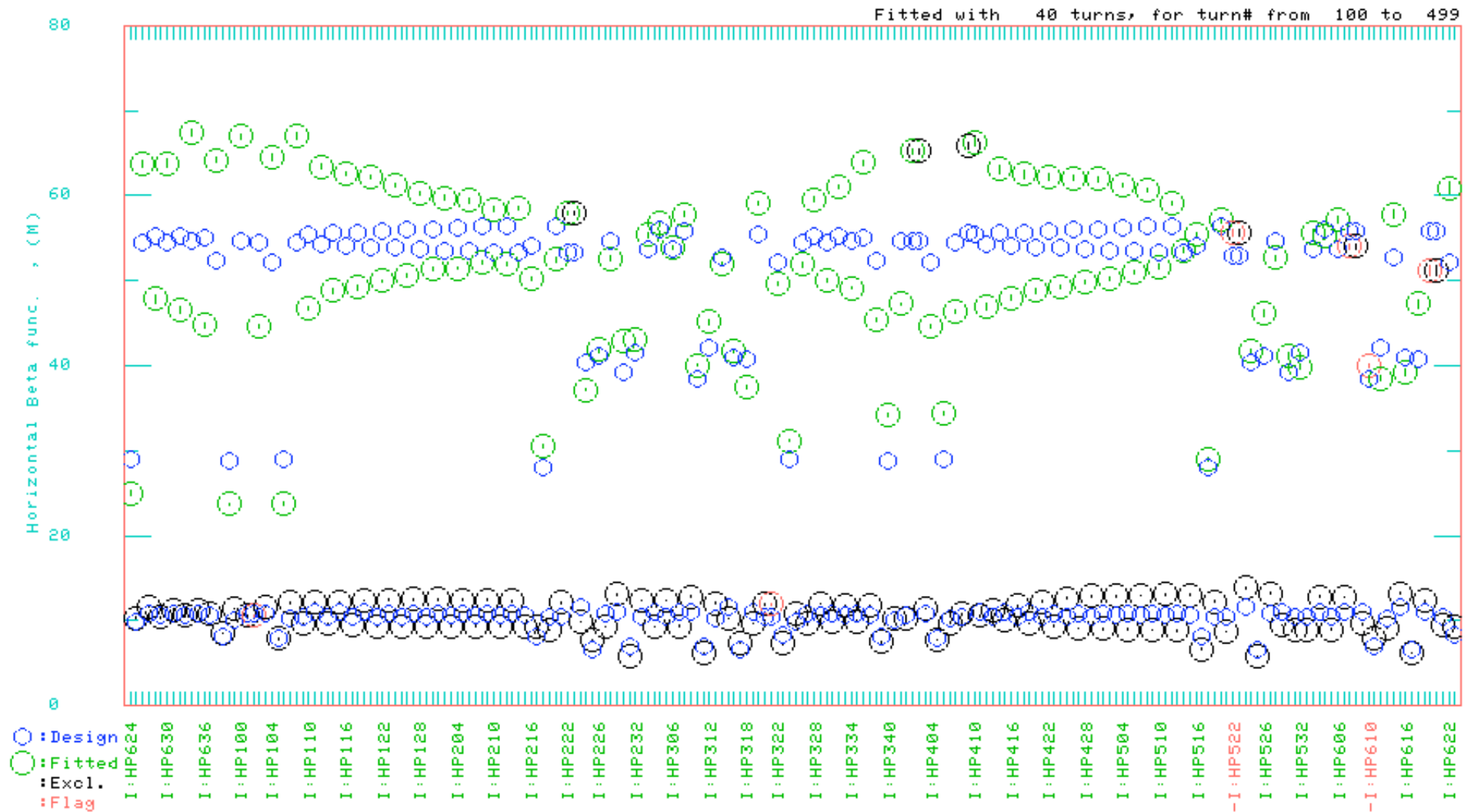
Vertical TBT orbit, first 5 turns

(mi8g_061009_vert1.tbt) 09-OCT-06 14:31:03 vert, vt80500.5 amp, cv=-2



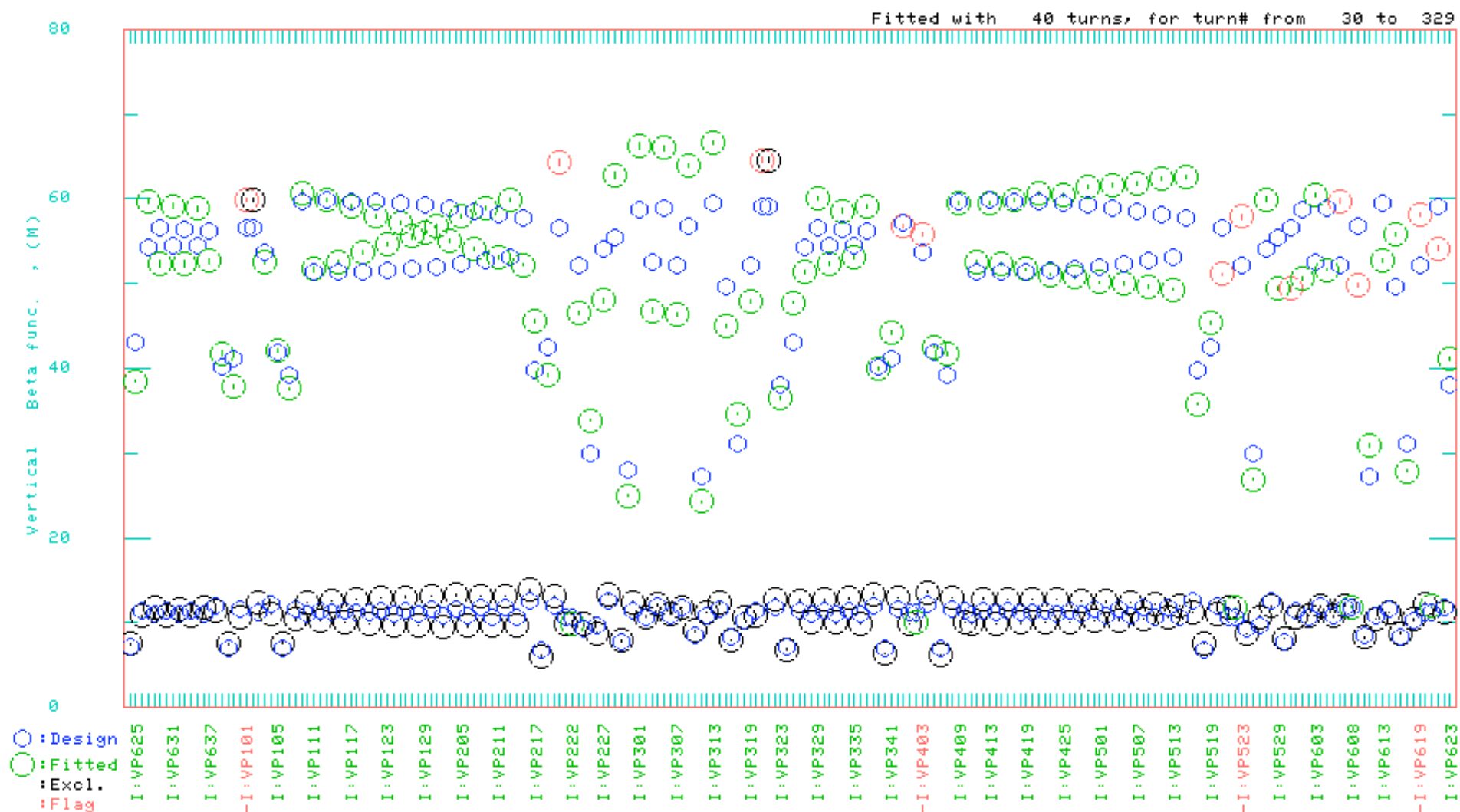
Horizontal beta function

(mi8g_061009_horz1.tbt) 09-OCT-06 14:11:39 horz, ht806@0.5 amp, ch=0

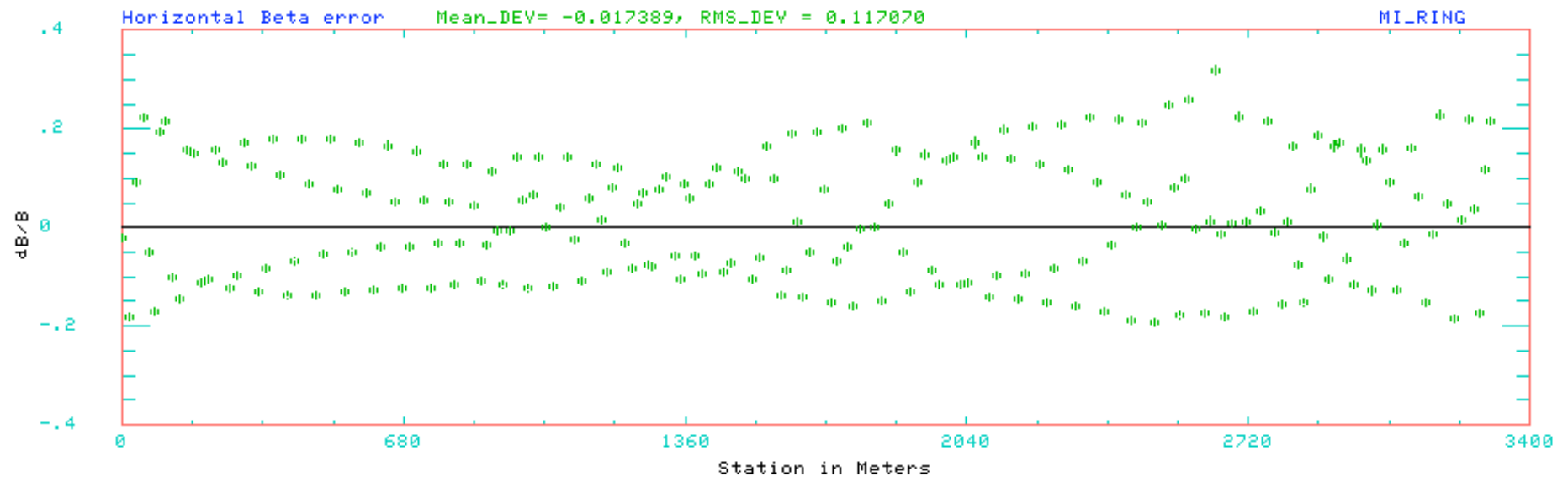
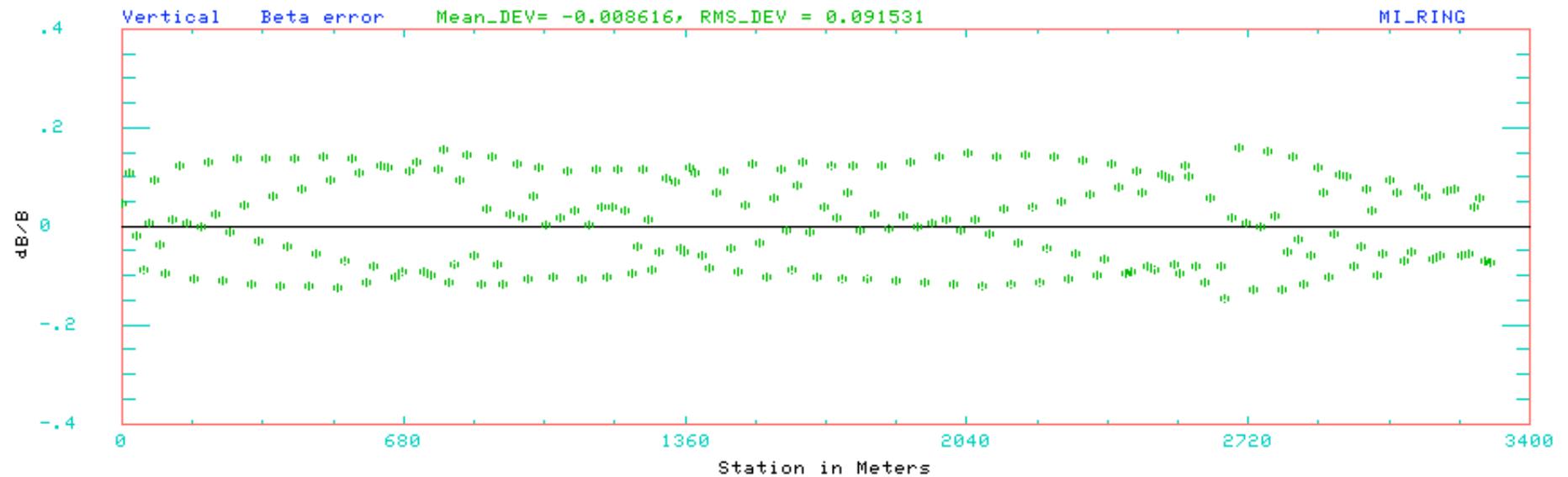


Vertical beta function

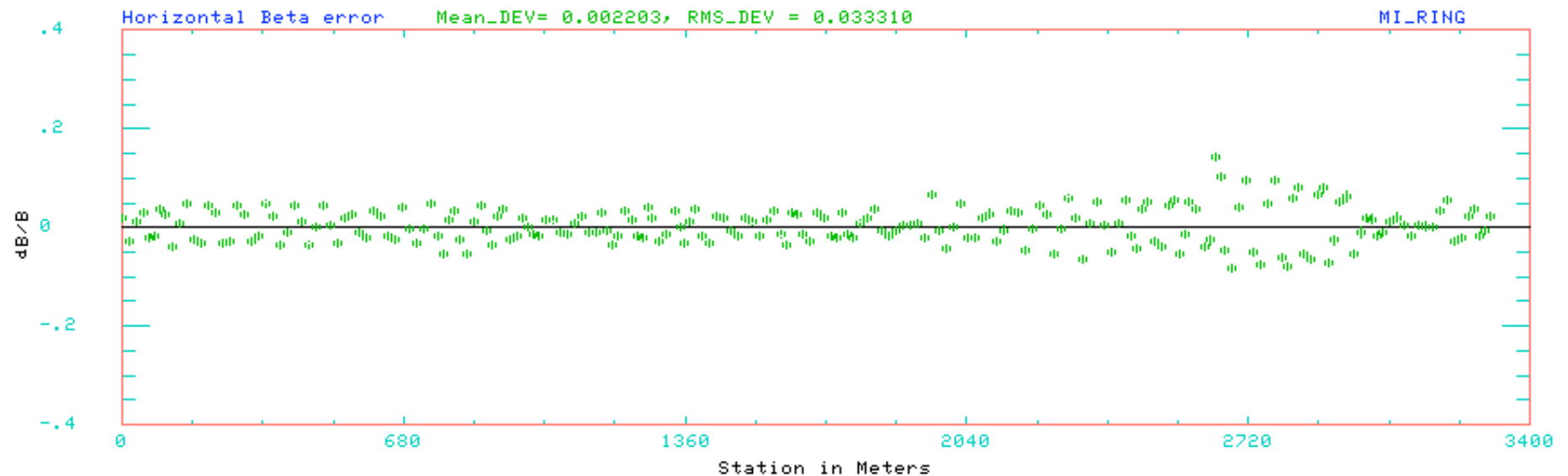
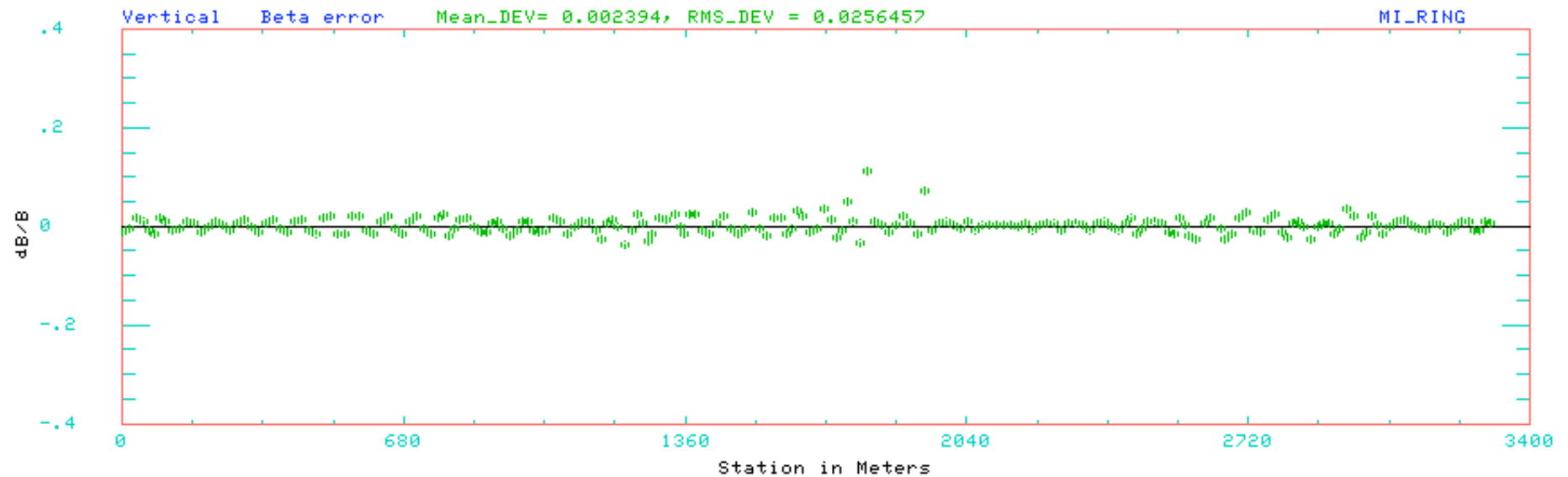
(mi8g_061009_vert1.tbt) 09-OCT-06 14:31:03 vert, vt805@0.5 amp, cv=-2



$\Delta\beta/\beta$ for both planes



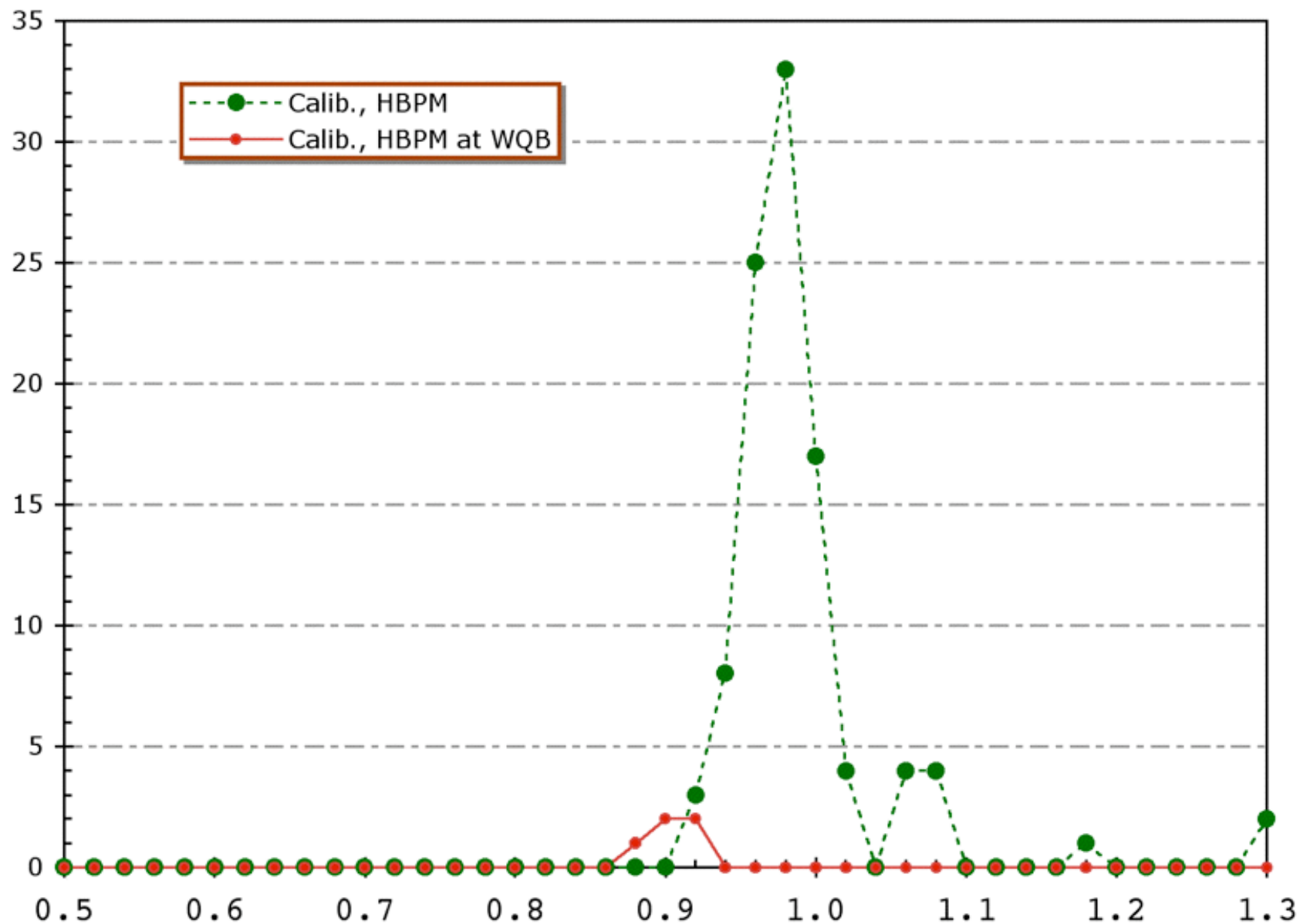
$\Delta\beta/\beta$ with quad errors



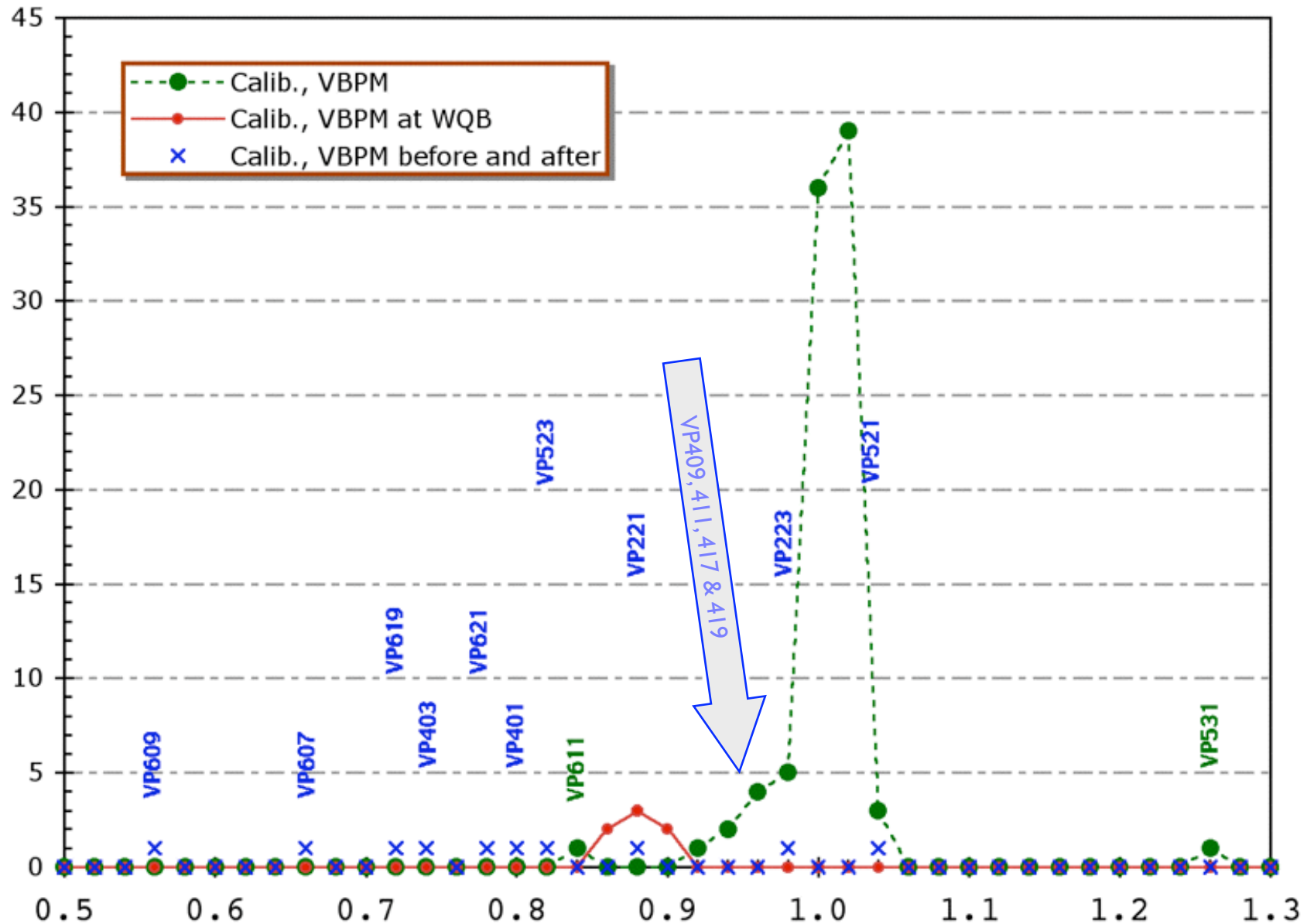
Quad errors used

| | Used in I90 | Design value | | |
|------|-------------|--------------|-------------------|------------|
| | KG/amp | KG/amp | Δ strength | % Δ |
| Q101 | 0.056865 | 0.056965 | -0.0001 | -0.2 |
| Q222 | 0.056765 | 0.056965 | -0.0002 | -0.4 |
| Q321 | 0.057265 | 0.056965 | 0.0003 | 0.5 |
| Q402 | 0.056765 | 0.056965 | -0.0002 | -0.4 |
| Q409 | 0.058265 | 0.056965 | 0.0013 | 2.3 |
| Q410 | 0.057665 | 0.056965 | 0.0007 | 1.2 |
| Q411 | 0.058265 | 0.056965 | 0.0013 | 2.3 |
| Q417 | 0.057775 | 0.056965 | 0.0008 | 1.4 |
| Q418 | 0.057865 | 0.056965 | 0.0009 | 1.6 |
| Q419 | 0.057765 | 0.056965 | 0.0008 | 1.4 |
| Q619 | 0.057180 | 0.056780 | 0.0004 | 0.7 |
| Q620 | 0.056865 | 0.056965 | -0.0001 | -0.2 |
| Q634 | 0.057365 | 0.056965 | 0.0004 | 0.7 |
| Q636 | 0.057065 | 0.056965 | 0.0001 | 0.2 |
| Q638 | 0.056880 | 0.056780 | 0.0001 | 0.2 |

Relative BPM calibration, horizontal

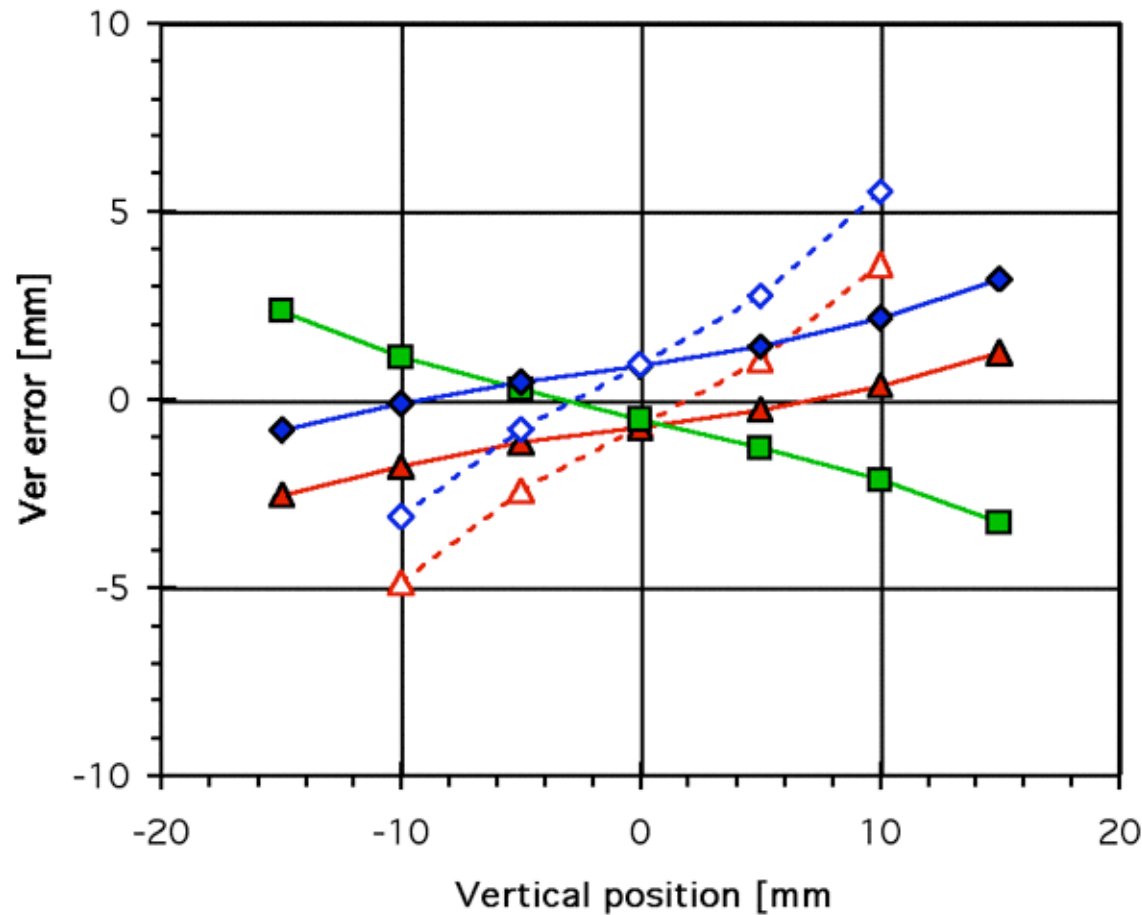


Relative BPM calibration, vertical

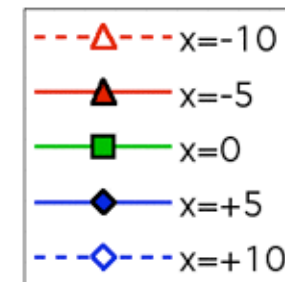
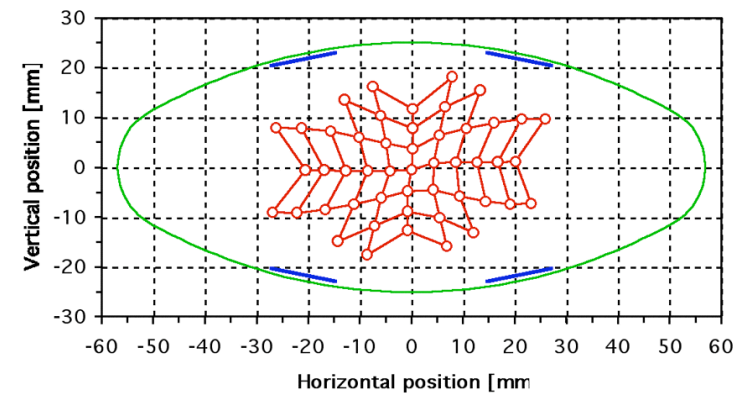


Vertical BPM gain distortion

Vertical fit error vs. x,y positioic



Measured position after linearizatic



MI 8-GeV horizontal orbit

DISPLAY - Frame 0

FILE 45: 8 Gev display 6batch #23s

Horizontal

18 .1991 sec
12-OCT-2006 16:18:43

| | 10 | 20 | 30 | 40 | 50 | 60 |
|--------|--------|--------|--------|--------|--------|--------|
| 00 ... | -.031 | | | .1261 | | |
| 02 ... | .4558 | .0912 | .3198 | -28.98 | -.2741 | -.2576 |
| 04 ... | .0499 | .4655 | .3927 | -7.903 | -.0206 | .3858 |
| 06 ... | -.2384 | -.5314 | -.4279 | -.2067 | -.0904 | -10.65 |
| 08 ... | -.1102 | -.8832 | -.4026 | 1.853 | -.3592 | -33.3 |
| 10 ... | .1665 | .0745 | .3195 | 14.95 | -.2943 | -23.38 |
| 12 ... | -.3042 | .6141 | .1489 | .014 | -.0624 | -.1222 |
| 14 ... | -.4303 | -.4586 | -.3397 | .0055 | -.1932 | .0078 |
| 16 ... | .031 | -.7932 | -.4509 | -.3966 | -.421 | -.2833 |
| 18 ... | .2958 | .2637 | .3478 | 13 | -.0677 | -5.189 |
| 20 ... | -.2181 | .8022 | -9.772 | .1098 | -3.588 | -34.97 |
| 22 ... | -.2194 | 16.67 | -17.22 | .0201 | -27.63 | .3083 |
| 24 ... | -.0193 | -.6388 | -.202 | -.3781 | -8.208 | -.0204 |
| 26 ... | .3847 | .3162 | -.0758 | -.253 | -.4041 | 1.603 |
| 28 ... | -.3423 | .6548 | -.108 | -.0956 | -.0359 | 5.976 |
| 30 ... | -.8777 | -.4924 | -.3974 | -.1516 | -1.78 | -.0837 |
| 32 ... | | -.4504 | -.3011 | | -.2651 | -.183 |
| 34 ... | | | -.1401 | | | 3.878 |
| 36 ... | | | -.0921 | | | .03 |
| 38 ... | | | -.3349 | | | -.1478 |
| 40 ... | | | -.1261 | | | -.2067 |



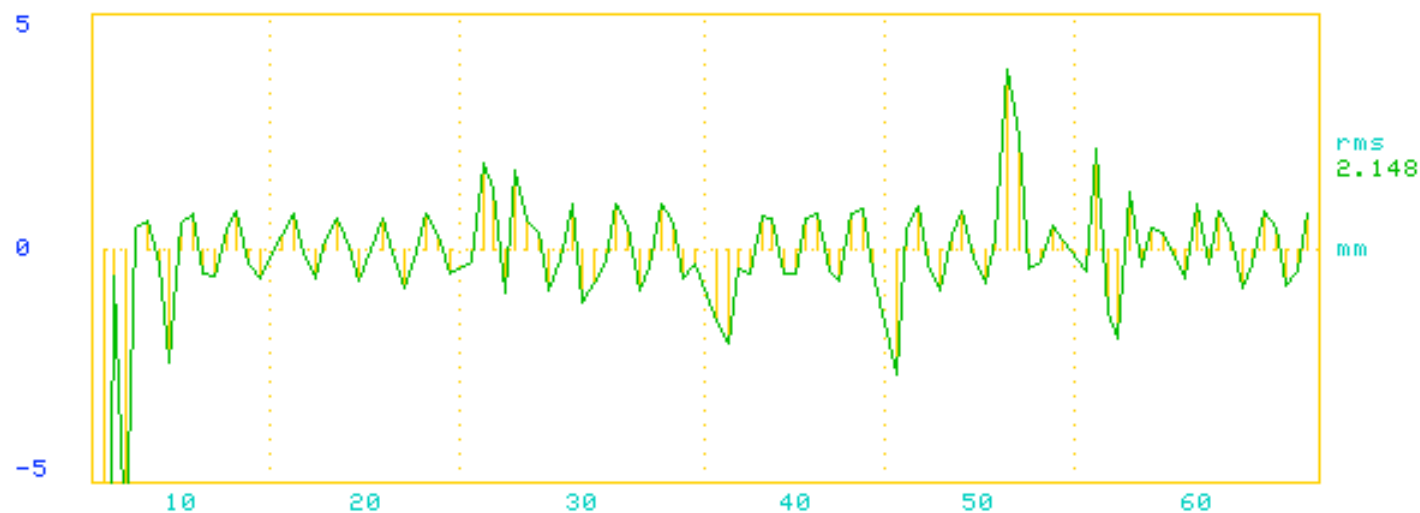
DISPLAY - Frame 0

FILE 45: 8 Gev display 6batch #23s

Vertical

18 .1991 sec
12-OCT-2006 16:18:43

| | | 10 | 20 | 30 | 40 | 50 | 60 |
|----|-----|--------|--------|--------|--------|--------|--------|
| 01 | ... | -18.6 | .2847 | -.2921 | -1.572 | -2.705 | -.4976 |
| 03 | ... | -.5964 | .7725 | 1.808 | -2.014 | .4486 | 2.154 |
| 05 | ... | -6.529 | -.1235 | 1.251 | -.4292 | .8864 | -1.339 |
| 07 | ... | .4562 | -.6616 | -.956 | -.555 | -.323 | -1.904 |
| 09 | ... | .5917 | .1801 | 1.695 | .6743 | -.8764 | 1.227 |
| 11 | ... | -.3264 | .6223 | .6204 | .6387 | .3129 | -.3682 |
| 13 | ... | -2.429 | .0066 | .3324 | -.5277 | .7891 | .4172 |
| 15 | ... | .5309 | -.6958 | -.8752 | -.5414 | -.2273 | .3433 |
| 17 | ... | .7471 | -.0397 | -.2294 | .6456 | -.7245 | -.2185 |
| 19 | ... | -.5507 | .6359 | .9659 | .7578 | .261 | -.6316 |
| 21 | ... | -.5677 | -.0584 | -1.162 | -.4833 | 3.85 | .958 |
| 23 | ... | .3897 | -.8576 | -.7581 | -.6791 | 2.418 | -.3474 |
| 25 | ... | .7787 | -.0859 | -.2782 | .7303 | -.4522 | .8 |
| 27 | ... | -.3101 | .7764 | .9526 | .862 | -.2672 | .2622 |
| 29 | ... | -.6332 | .3118 | .4756 | -.4719 | .483 | -.8423 |
| 31 | ... | | -.5429 | -.8844 | | .1967 | -.3555 |
| 33 | ... | | | -.3995 | | | .7856 |
| 35 | ... | | | .9605 | | | .4503 |
| 37 | ... | | | .5228 | | | -.7892 |
| 39 | ... | | | -.6361 | | | -.4841 |
| 41 | ... | | | -.3305 | | | .733 |



Next

- ❖ Another set of TBT data
 - ▶ BPM calibration
- ❖ Matching MI8 line to MI
- ❖ Emittance monitor